Ruckus Wireless®
ZoneFlex® 7762 Dual Band 802.11n Outdoor Access Point

Getting Started Guide

Part Number 800-70216-001 (Revision C)
Published November 2009

www.ruckuswireless.com

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1 About This Getting Started Guide

This *Getting Started Guide* provides information on how to set up the Ruckus Wireless ZoneFlex 7762 802.11n Outdoor Access Point on your network. Topics covered in this guide include installation, basic configuration, and device mounting.

This guide is intended for use by those responsible for installing and setting up network equipment. Consequently, it assumes a basic working knowledge of local area networking, wireless networking, and wireless devices.

Related Documentation

In addition to this guide, each Ruckus Wireless ZoneFlex 7762 802.11n Outdoor Access Point documentation set includes the following:

- **User Guide**: Provides detailed information on how to configure the Access Point. The User Guide is available for download on the Ruckus Wireless Support Web site at:

  http://support.ruckuswireless.com/documents

- **Release Notes**: Provides late-breaking information about the current software release, including new features, enhancements, and known issues. If the information in the Release Notes differs from the information in this guide, follow the instructions in the Release Notes.
- **Online Help**: Accessible from the Access Point's Web interface, the Online Help provides information that helps you configure the device from the Web interface.

Using ZoneDirector or FlexMaster to Manage the Access Point

If you are planning to use either Ruckus Wireless FlexMaster or Ruckus Wireless ZoneDirector to manage the Access Point, this guide describes the required steps that will enable the Access Point to report to and communicate with FlexMaster or ZoneDirector successfully.

- To set up the Access Point for management by FlexMaster, refer to "(Optional) Set the FlexMaster Server Address" on page 30.
- To set up the Access Point for management by ZoneDirector, refer to "Configuring for Management by ZoneDirector" on page 14.

2 Unpacking the ZoneFlex Access Point

1. Open the Access Point package, and then carefully remove the contents.
2. Return all packing materials to the shipping box, and put the box away in a dry location.
3. Verify that all items listed in Package Contents below are included in the package. Check each item for damage. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.

Package Contents

A complete Access Point package contains all of the items listed below:

- ZoneFlex 7762 Outdoor Access Point
- Small plastic bag containing the Ruckus Wireless PoE injector for ZoneFlex 7762 AP
- Box containing the power adapter for the PoE injector
- Box containing the mounting kit (see "Mounting Kit Contents" for details)
- Small plastic bag containing the DC connector pins and DC cord connector assembly (see Figure 1)
- Two small plastic bags each containing RJ-45 waterproofing assembly (see Figure 2)
- Small plastic bag containing an electrical shunt (for resetting the Access Point to factory default settings, see Figure 3)
- Ground screw
- Service Level Agreement / Limited Warranty Statement
- Regulatory Statement
- This *Getting Started Guide*

WARNING: The Ruckus Wireless PoE injector and power adapter (if supplied with your Access Point) are for indoor use only. Never mount the PoE injector and power adapter outdoor with the Access Point.

Figure 1. DC connector pins and DC cord connector assembly

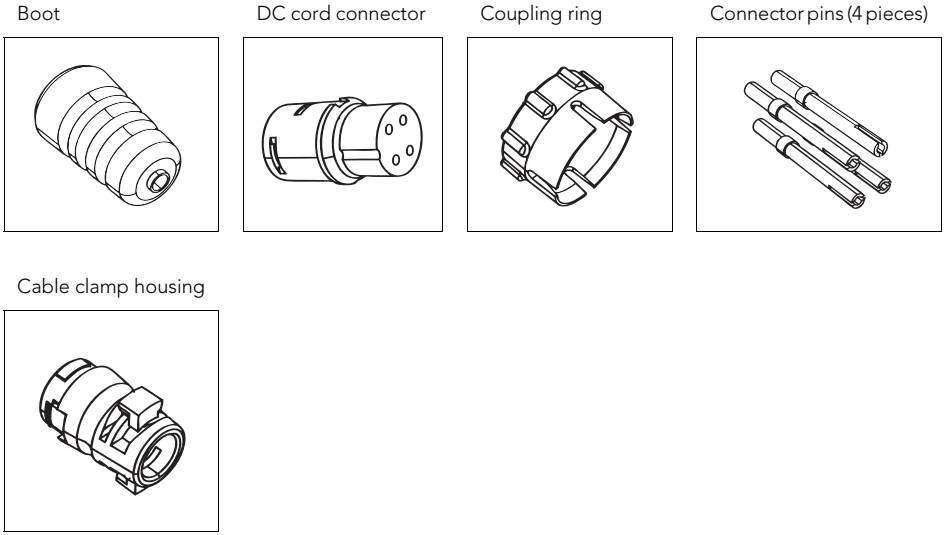


Figure 2. RJ-45 waterproofing assembly

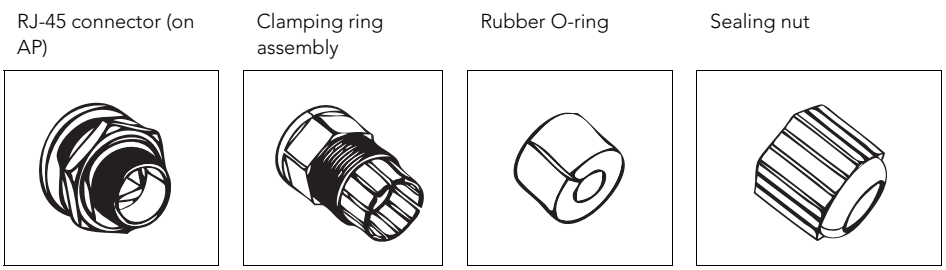
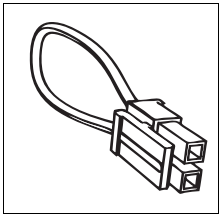


Figure 3. Electrical shunt for resetting the Access Point to factory default settings

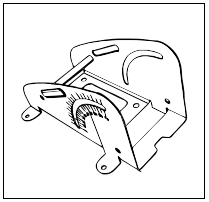


Mounting Kit Contents

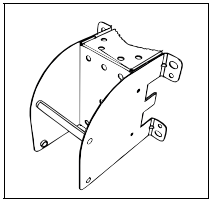
- Dynamic bracket
- Static bracket
- Steel clamp (2 pieces)
- Machine screws (8 pieces)
- Hex bolts (4 pieces)
- Flat washers (4 pieces)
- Split lock washers (4 pieces)
- Wall anchors (4 pieces)

Figure 4. Mounting kit contents

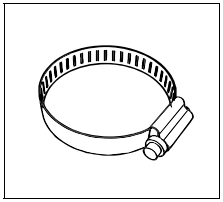
Dynamic bracket



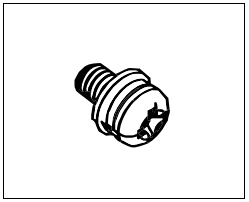
Static bracket



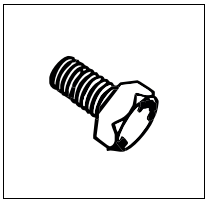
Steel clamp (2 pieces)



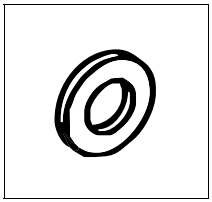
Machine screw (8 pieces)



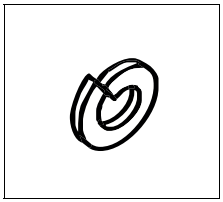
Hex bolt (4 pieces)



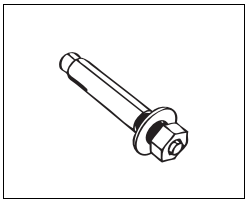
Flat washer (4 pieces)



Split lock washer (4 pieces)



Wall anchor with metal cone and hex nut (4 pieces)



3 Before You Begin

Before installing and setting up the Access Point, Ruckus Wireless recommends that you first complete the following pre-installation tasks.

Prepare the Required Hardware and Tools

You must supply the following tools and equipment:

- A notebook computer running on Windows XP/2000 and installed with one wireless 802.11b/g/n network card and one Ethernet card
- A pair of long nose pliers
- 6mm flathead screwdriver
- 6mm Phillips screwdriver
- 10mm ratchet wrench
- Electric drill with 8mm drill bit (if mounting on a flat surface)

NOTE: At the beginning of each procedure, this guide lists the specific tools, accessories, and equipment that you will need to complete the procedure.

Get to Know the Access Point Features

Figure 5 and Figure 6 identify the Access Point features that are relevant to the installation and mounting instructions that this guide provides. Before you begin the installation process, Ruckus Wireless recommends that you become familiar with these features.

Figure 5. Access Point parts

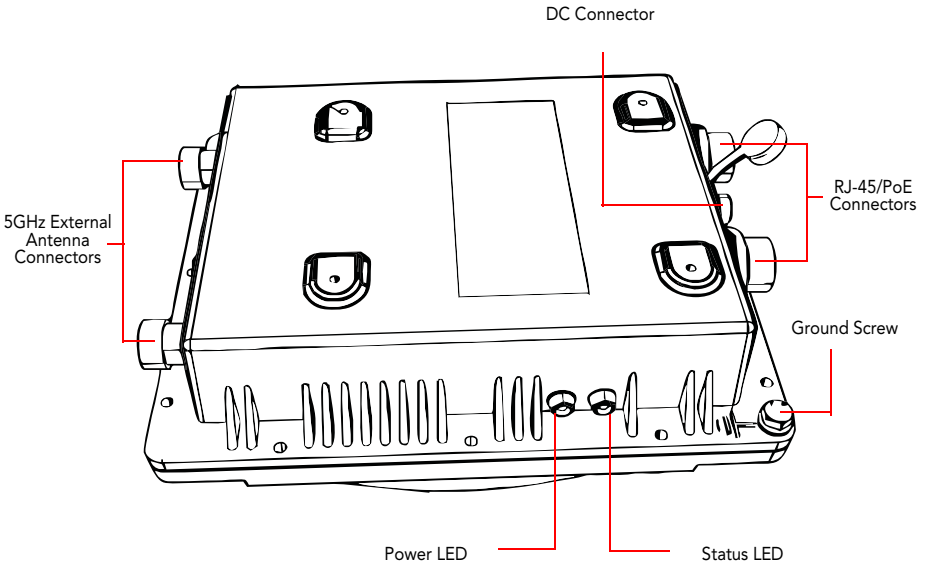


Table 1. LEDs and connectors on the AP

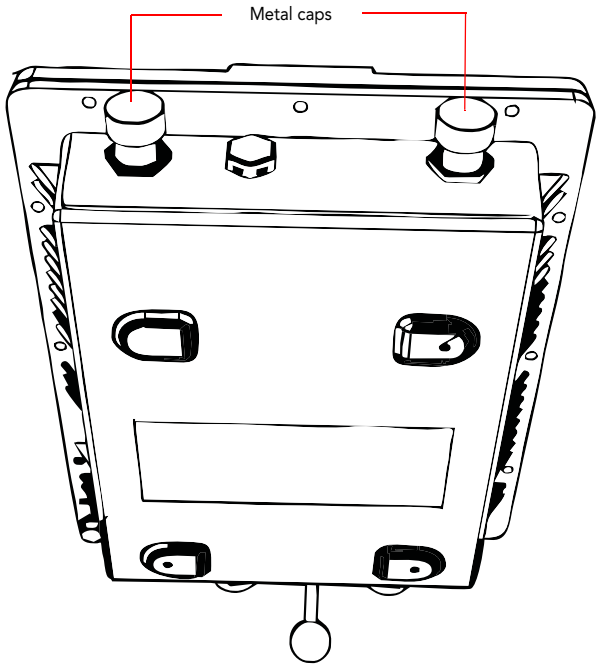
Label	Description
Power LED	• *Off*: No power is available, or the Access Point is not connected to a power source. • *Red*: The Access Point is powering on. • *Green*: The Access Point is connected to a power source and has completed its power-on sequence.
Status LED	If the Access Point is operating in standalone mode: • *Amber*: The WLAN service is up and at least one wireless client is associated with the AP. • *Flashing amber*: The WLAN service is up and no wireless clients are currently associated with the AP. If the Access Point is being managed by Ruckus Wireless ZoneDirector: • *Green*: The AP is part of a mesh network (either as Root AP or Mesh AP) and is connected to an uplink with good signal. If mesh networking is disabled but the WLAN service is available, the Status LED is also green. • *Fast flashing green*: The AP is part of a mesh network (as Mesh AP) and is connected to an uplink with fair signal. • *Slow flashing green*: This Mesh AP is searching for an uplink or is attempting to establish communication with ZoneDirector. • *Off*: Mesh networking is disabled and the WLAN service is unavailable.
RJ45 Connectors	Two LAN ports that support Power over Ethernet (PoE): • **PoE IN** port: Supports 10/100/1000Mbps connections, connects to the network and receives 802.at PoE from the supplied PoE injector (if connected). • **PoE OUT** port: Supports 10/100/1000Mbps connections. If the supplied PoE injector is used, this port can supply 802.af PoE to the connected PoE-capable device (for example, another ZoneFlex 7762 AP or an IP-based surveillance camera). To use this port to supply PoE, you first need to enable the PoE feature on the Web interface. For more information, refer to "(Optional) Enable PoE for the PoE OUT Port" on page 31.

Table 1. LEDs and connectors on the AP

Label	Description
DC Connector	In addition to PoE, you can also use direct current or DC (from a battery, for example) to supply power to the Access Point.

If you want to extend the range of your wireless network, you can connect external high gain antennas (5GHz only) to the standard N-type radio frequency (RF) antenna connectors on the top panel of the Access Point. The 5GHz antennas must have a gain of less than 14dBi to comply with FCC and CE regulations. For more information, refer to "(Optional) Mounting and Connecting the 5GHz External Antennas" on page 51.

Figure 6. The 5GHz antenna connectors are protected by metal caps



Perform a Site Survey

Before installing the Access Point, perform a site survey to determine the optimal Access Point placement or maximum range, coverage, and network performance. When performing a site survey, consider the following factors:

- *Data rates*: Range is generally inversely proportional to data rates. The maximum radio range is achieved at the lowest workable data rate. Higher data rates will generally be achieved at closer distances.
- *Antenna type and placement*: Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, radio range is increased by mounting the radio higher off of the ground with the Access Point oriented so that the dome is facing down (for recommended orientation examples, refer to Figure 7 on page 10). If you are connecting an external antenna (5GHz only) to the Access Point, mount the Access Point so that the external antenna is pointing down.
- *Physical environment*: Clear or open areas provide better radio range than closed or filled areas. The less cluttered the operating environment, the greater the wireless range.
- *Obstructions, building materials, and sources of interference*: Physical obstructions, such as concrete pillars, steel beams, filing cabinets, buildings, or trees, can block or hinder wireless communication. Avoid installing the Access Point in an environment where there is an obstruction between sending and receiving devices. A number of machines and electronic devices that emit radio waves – cranes, wireless phones, microwave ovens, satellite dishes – interfere with and block wireless signals. Building materials used in construction also influence radio signal penetration. For example, drywall construction permits greater range than concrete blocks.

For more Access Point placement guidelines, refer to "Determine the Optimal Mounting Location and Orientation".

Determine the Optimal Mounting Location and Orientation

The location and orientation that you choose for the Access Point play a critical role in the performance of your wireless network. In general, Ruckus Wireless recommends installing the Access Point away from obstructions and sources of interference and ensuring that the Access Point's dome is pointing in the general direction of its wireless clients.

Figure 7. Recommended orientation for maximum horizontal plane coverage

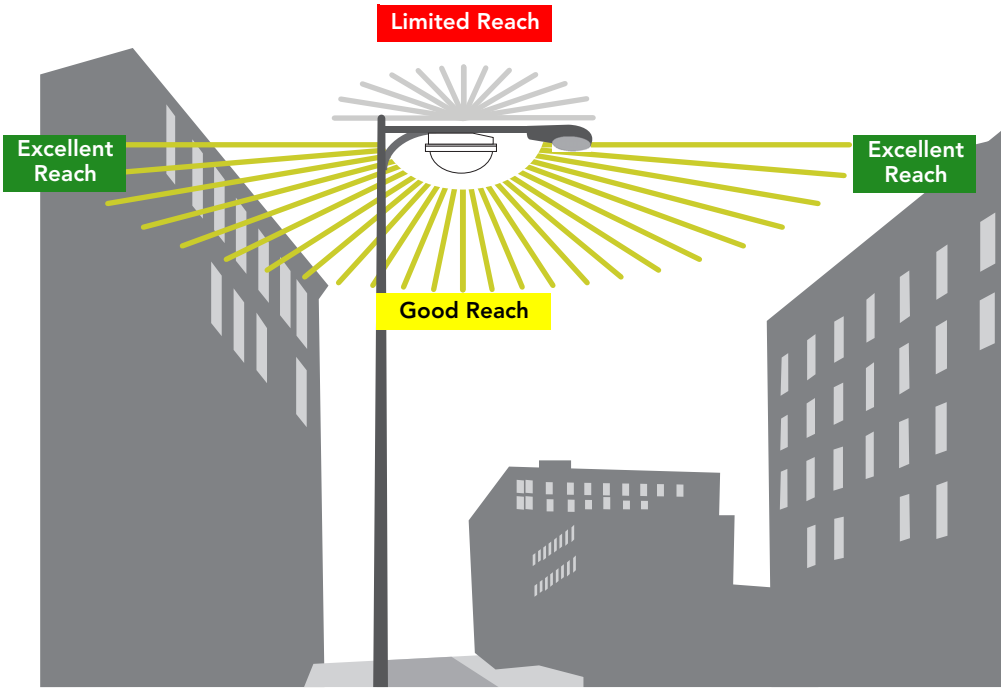


Figure 8. Recommended orientation for maximum vertical plane coverage

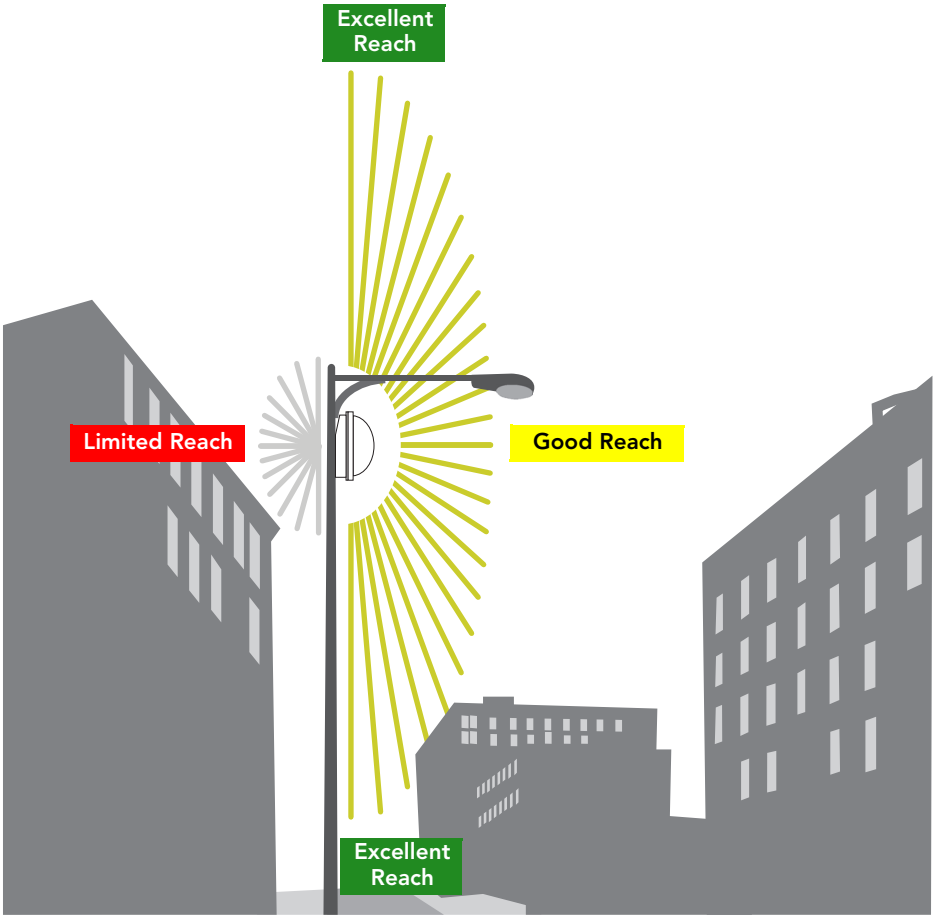
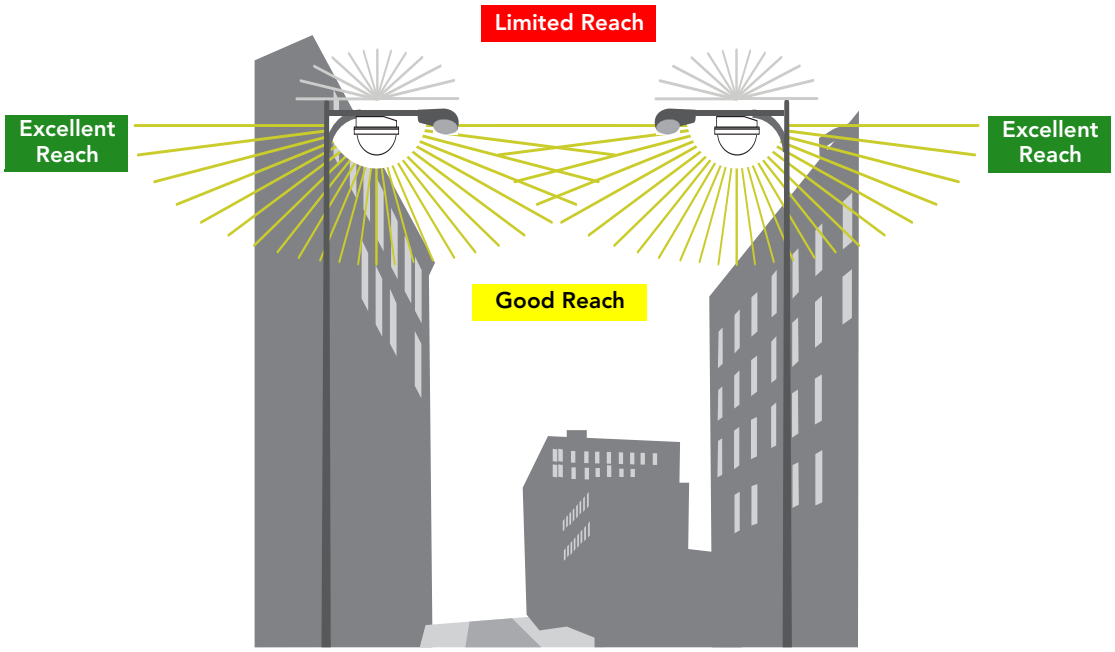


Figure 9. Recommended orientation for maximum mesh coverage

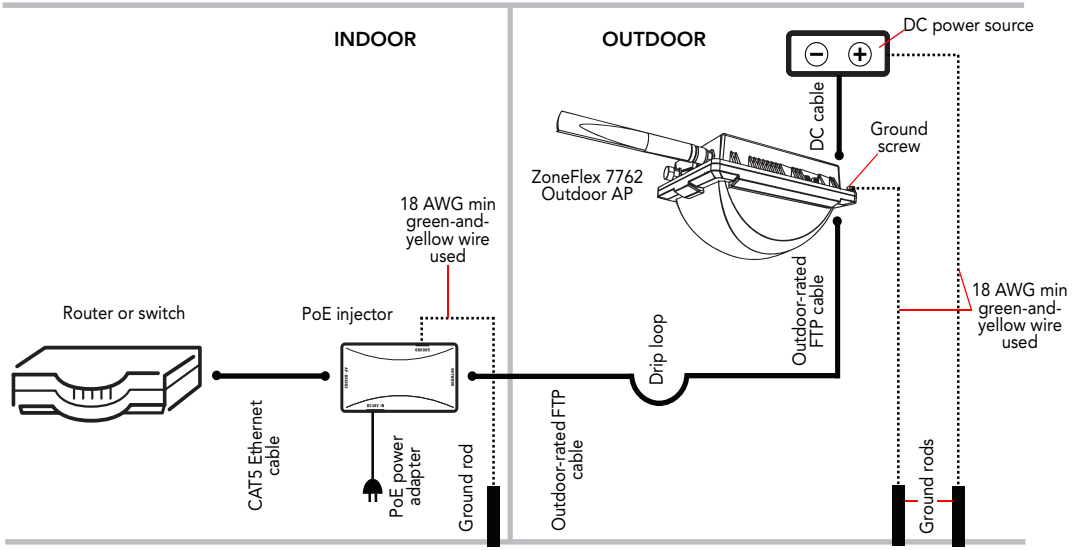


Become Familiar with the Installation Components

The Access Point can be installed in an indoor or outdoor environment, such as an interior wall or ceiling or the exterior roof overhang of a building or a streetlight pole. Refer to Figure 10 for the components involved in a typical installation.

Take note of the components that must be installed indoor and outdoor. The PoE injector and power adapter that are shipped with the Access Point are for indoor use only. Ruckus Wireless also strongly recommends that you form a drip loop on any cable that is connected to devices that are installed outdoor (for example, the Access Point).

Figure 10. Typical installation components using both PoE and DC power sources



WARNING: Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

WARNING: Installation of this equipment must comply with local and national electrical codes.

CAUTION: Make sure that you form a 3”-5” drip loop in any cable that is attached to the Access Point. This will prevent water from running along the cable and entering the Access Point or the building where the cable terminates.

CAUTION: Be sure that grounding is available and that it meets local and national electrical codes. For additional lightning protection, use lightning rods and lightning arrestors.

WARNING: The Ruckus Wireless PoE injector (if supplied with your Access Point) is for indoor use only. Never mount the PoE injector outdoor with the Access Point.

Decide How You Will Supply Power to the Access Point

The Access Point supports Power over Ethernet (PoE) and 12V DC power and can be connected to both power sources at the same time. If you connect the Access Point to both PoE and DC power sources at the same time, it will use DC power as the primary power source and PoE as the backup power source.

4 Configuring the Access Point

The procedure for completing the Access Point's essential configuration depends on whether you want it to be managed by either ZoneDirector or FlexMaster or to operate as a standalone access point. Refer to the section that is relevant to your deployment:

- Configuring for Management by ZoneDirector
- Configuring for Standalone Operation or for Management by FlexMaster

Configuring for Management by ZoneDirector

If ZoneDirector is installed on the network, you can configure the Access Point for management by ZoneDirector. Simply connect the Access Point to same Layer 2 subnet as ZoneDirector. When the Access Point starts up, it will discover and register with ZoneDirector automatically.

NOTE: In addition to using Layer 2 auto discovery to enable the Access Point to register with ZoneDirector, you can also use DHCP Option 43 or DNS. For more information, refer to the *ZoneDirector User Guide*.

Before starting this procedure, check the back panel of the Access Point (above the recess where the bottom connectors are located), and then write down the MAC address of the Access Point. You will need the MAC address to identify the Access Point on the ZoneDirector Web interface.

What You Will Need

Before starting with the configuration task, make sure that you have the following requirements ready:

- A computer from which you can access the ZoneDirector Web interface
- Mozilla Firefox 2.0 (or later) or Microsoft Internet Explorer 6.0 (or later) installed on the administrative computer
- One Cat5e foil screened twisted pair (FTP) solid cable
- Two Ethernet cables
- PoE injector (if not supplied with the Access Point, you can purchase a third party 802.3at-compliant PoE injector or switch)
- 6mm Phillips screwdriver

If you are planning to power the Access Point using a 12v DC connection, you will also need the following:

- One 0.195" to 0.265" diameter DC cable
- 12v DC, 1.5A DC power source (for example, a battery)

Step 1: Connect the Cables to the Access Point

The procedure for connecting cables to the Access Point depends on the power source that you will be using. You can do one of the following:

- Use Power Over Ethernet
- Use DC Power

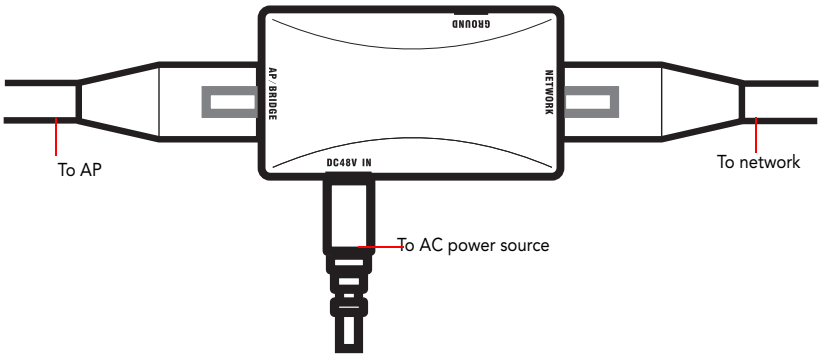
NOTE: You only need to connect one type of power source at this point, even if you are planning to use both PoE and DC power in your final deployment.

Use Power Over Ethernet

1. Take out the PoE injector and the power adapter from the Access Point package.
2. Obtain two Ethernet cables.
3. Connect one end of one Ethernet cable to the **AP/BRIDGE** port on the PoE injector, and then connect the other end to the **PoE IN** port on the Access Point.

4. Connect one end of the other Ethernet cable to the **NETWORK** port on the PoE injector, and then connect the other end to ZoneDirector directly or through a hub.
5. Connect the power jack to the **DC 48V IN** connector on the PoE injector, and then plug the power adapter to a power source. The single LED on the PoE injector turns green.
6. Check the **Power LED** on the side of the Access Point. Initially, the LED will turn *red* as the AP powers on. After it completes the power-on sequence, the LED will turn *green*.

Figure 11. Connect the Ethernet cables and power adapter to the PoE injector



You have completed connecting the Access Point to the network and to a PoE power source.

Use DC Power

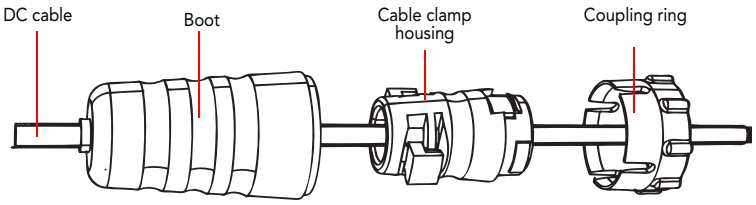
To use DC to power the Access Point, you need to assemble the DC cord connector, and then plug it into the 12V DC connector on the AP. To complete this task, you will need:

- A 0.195" to 0.265" diameter DC cable that is long enough to connect the AP (at its mounting location) with the DC power source.
- A pair of long nose pliers
- A soldering gun (optional)

To assemble the DC cord connector and supply DC power to the AP

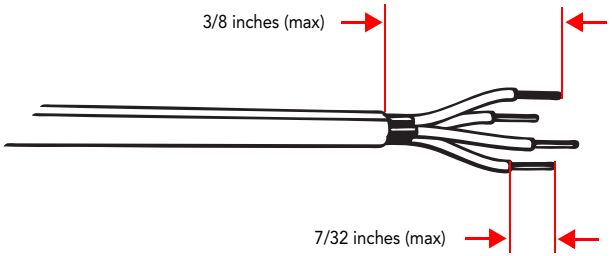
1. Take the small plastic bag containing the DC connector pins and DC cord connector from the AP package. Take its contents out.
2. Feed the end of the DC cable through the boot, cable clamp housing, and coupling ring (in the same order). See Figure 12.

Figure 12. DC cable connector assembly



3. Strip the DC cable for about 3/8" and each of the four conductors for about 7/32".

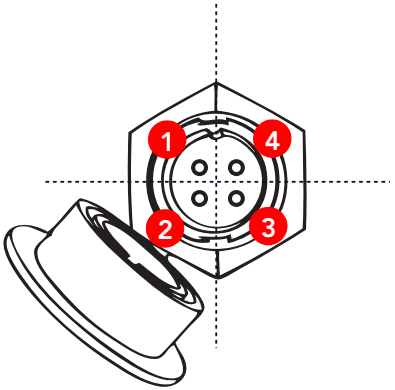
Figure 13. Strip the DC cable and the four conductors



4. Insert the stripped part of the conductors into the four connector pins, and then crimp the edges of the connector pins to secure the conductors. Alternatively, use a soldering gun to solder the conductors to the pins.

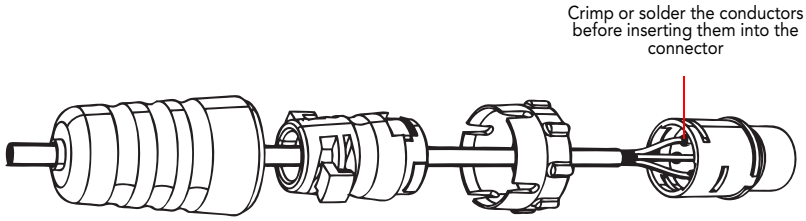
5. Insert all four connector pins into the holes on the cord connector. See Figure 14 for the correct pinout connections.

Figure 14. Pinout connections for the DC cable



No.	Pinout
1	+DC power
2	-DC power
3	Factory reset
4	Ground

Figure 15. Insert the conductors into the pins, crimp or solder the edges, and then insert the pins into the connector



6. Push the coupling ring all the way forward so that it covers the edge of the cord connector.
7. Push the cable clamp housing forward until it locks into the connector body. The two clamps should snap into their compartments.
8. Push the boot all the way forward so that it covers the cable clamp housing securely.
9. Remove the protective cap from the 12V DC connector on the AP.
10. Connect the DC cord connector that you have assembled to the 12V DC connector on the AP.
11. Connect the DC cable to a DC power source (for example, a battery).

You have completed connecting the Access Point to a DC power source.

Step 2: Connect the Access Point to the Same Subnet as ZoneDirector

1. Verify that the Access Point is powered on.
2. Connect one end of an Ethernet cable to the **PoE IN** port on the AP.
3. Connect the other end of the Ethernet cable to the same Layer 2 subnet as ZoneDirector. The same Layer 2 subnet means that there should not be any router between the Access Point and ZoneDirector.
4. Log into ZoneDirector, and then go to the **Monitor** > **Access Points** page.
5. Look for the MAC address of the Access Point, and then check its **Status** column.
   - If automatic approval is enabled, the Status column should show **Connected**.
   - If automatic approval is disabled, click the **Allow** link that is on the same row as the Access Point's MAC address. This allows the Access Point to register with ZoneDirector.

When the Status column shows **Connected**, this indicates that the Access Point has successfully registered with ZoneDirector and that it can now be moved to its destination Layer 2 or Layer 3 network.

Step 3: Disconnect the Access Point from the Power Source

1. Disconnect the Access Point from the power source (either from the PoE injector or DC power source).
2. Verify that the **Power LED** on the Access Point is off.
3. Continue to "Attaching the Mounting Brackets" on page 42.

Configuring for Standalone Operation or for Management by FlexMaster

What You Will Need

Before starting with the configuration task, make sure that you have the following requirements ready:

- An administrative computer (notebook computer) running on Microsoft Windows Vista/XP/2000
- Mozilla Firefox 2.0 (or later) or Microsoft Internet Explorer 6.0 (or later) installed on the administrative computer
- One 5.6mm-6.0mm (outside diameter) Cat5e foil screened twisted pair (FTP) solid cable
- Two Ethernet cables
- PoE injector (supplied with the AP)
- 6mm Phillips screwdriver

If you are planning to power the Access Point using a 12v DC connection, you will also need the following:

- One 0.195" to 0.265" diameter DC cable
- 12v DC, 1A DC power source (for example, a battery)
- A pair of long nose pliers
- A soldering gun (optional)

Step 1: Prepare the Administrative Computer

NOTE: The following procedure is applicable if the administrative computer is running on Windows XP or Windows 2000. If you are using a different operating system, refer to the documentation that was shipped with your operating system for information on how to modify the computer's IP address settings.

1. On your Windows XP or Windows 2000 computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
   - On Windows XP, click **Start** > **Control Panel** > **Network Connections.**
   - On Windows 2000, click **Start** > **Settings** > **Network Connections**.
2. When the Network Connections window appears, right-click the icon for Local Area Connection, and then click **Properties**.

NOTE: Make sure that you configure the Local Area Connection properties, not the Wireless Network Connection properties.

3. When the **Local Area Connection Properties** dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The **Internet Protocol (TCP/IP) Properties** dialog box appears.
4. Write down all of the currently active network settings. You will need this information later when you restore your computer to its current network configuration.
5. Click **Use the following IP address**, and then configure the IP address settings with the values listed in Table 2. For a sample configuration, refer to Figure 16.

Table 2. Configure your computer's IP address settings

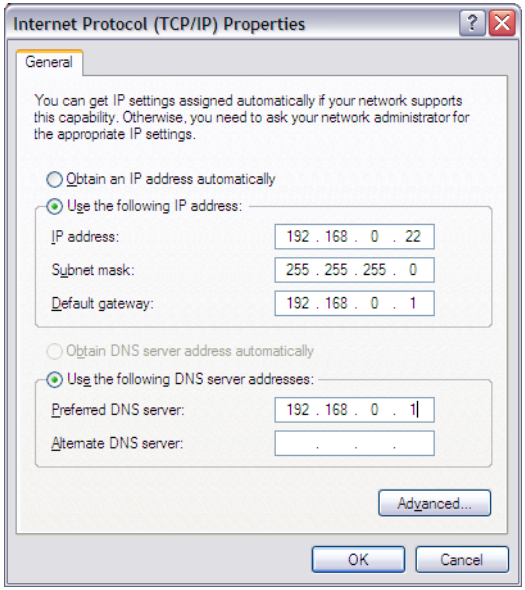
IP address	`192.168.0.22` (or any address in the 192.168.0.x network—with the exception of `192.168.0.1`, which is already used by the Access Point)
Subnet mask	`255.255.255.0`
Default gateway	`192.168.0.1`
Preferred DNS server	`192.168.0.1`

You can leave the **Alternate DNS server** box blank.

6. Click **OK** to save your changes and close the TCP/IP Properties dialog box.
7. Click **OK** again to close the Local Area Connection Properties dialog box.

Windows saves the IP address settings that you have configured.

Figure 16. Sample configuration in the Internet Protocol (TCP/IP) Properties dialog box


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 22
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 0 . 1
Alternate DNS server:
Advanced...
OK
Cancel

Step 2: Connect the Access Point to the Administrative Computer

The procedure for connecting the Access Point to the administrative computer depends on the power source that you will be using. You can do one of the following:

- Use Power Over Ethernet
- Use DC Power

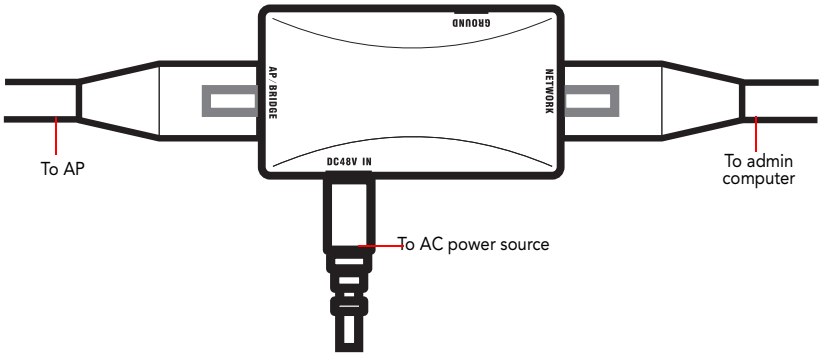
NOTE: You only need to connect one type of power source at this point, even if you are planning to use both PoE and DC power in your final deployment.

Use Power Over Ethernet

1. Take out the PoE injector and the power adapter from the Access Point package.
2. Obtain two Ethernet cables.
3. Connect one end of one Ethernet cable to the **AP/BRIDGE** port on the PoE injector, and then connect the other end to the **PoE IN** port on the Access Point.
4. Connect one end of the other Ethernet cable to the **NETWORK** port on the PoE injector, and then connect the other end to the admin computer.

5. Connect the power jack to the **DC 48V IN** connector on the PoE injector, and then plug the power adapter to a power source. The single LED on the PoE injector turns green.
6. Check the **Power LED** on the side of the Access Point. Initially, the LED will turn *amber* as the AP powers on. After it completes the power-on sequence, the LED will turn *green*.

Figure 17. Connect the Ethernet cables and power adapter to the PoE injector



You have completed connecting the Access Point to the administrative computer and to a PoE power source.

Use DC Power

NOTE: If you already assembled the DC cord connector in "Step 1: Connect the Cables to the Access Point" on page 15, you only need to connect the DC cord connector to the 12V DC port on the AP (see Step 10 and onwards).

To use DC to power the Access Point, you need to assemble the DC cord connector, and then plug it into the 12V DC connector on the AP. To complete this task, you will need:

- A 0.195" to 0.265" diameter DC cable. Make sure that it is long enough to connect the AP (at its mounting location) with the DC power source.
- A pair of long nose pliers
- A soldering gun (optional)

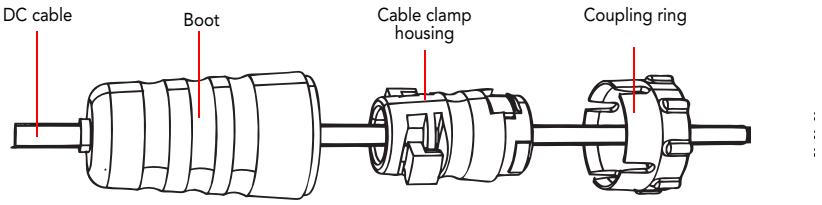
To assemble the DC cord connector and supply DC power to the AP

1. Connect one end of an Ethernet cable to the **PoE IN** port on the AP, and then connect the other end to the administrative computer's Ethernet port.

NOTE: A waterproof connector for the RJ-45 port is supplied with the AP. You do not need to assemble the connector at this point.

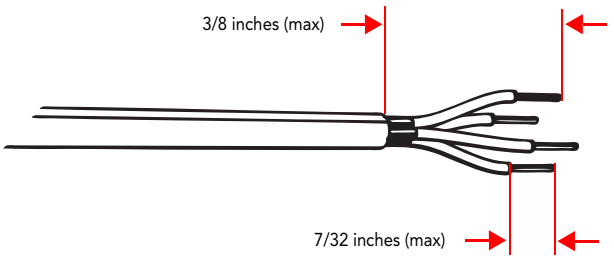
2. Take the small plastic bag containing the DC connector pins and DC cord connector from the AP package. Take its contents out.
3. Feed the end of the DC cable through the boot, cable clamp housing, and coupling ring (in the same order). See Figure 18.

Figure 18. DC cable connector assembly



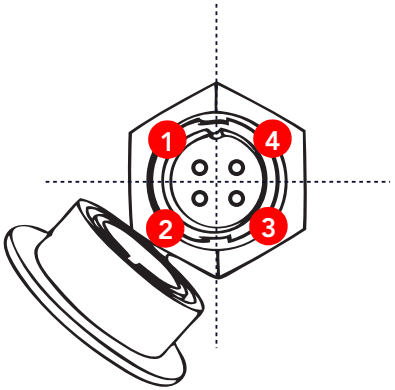
4. Strip the DC cable for about 3/8" and each of the four conductors for about 7/32".

Figure 19. Strip the DC cable and the four conductors



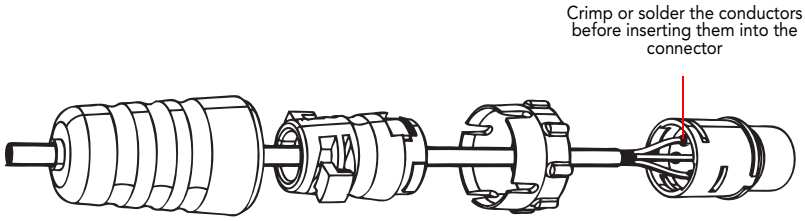
5. Insert the stripped part of the conductors into the four connector pins, and then crimp the edges of the connector pins to secure the conductors. Alternatively, use a soldering gun to solder the conductors to the pins.
6. Insert all four connector pins into the holes on the cord connector. See Figure 31 for the correct pinout connections.

Figure 20. Pinout connections for the DC cable



No.	Pinout
1	+DC power
2	-DC power
3	Factory reset
4	Ground

Figure 21. Insert the conductors into the pins, crimp or solder the edges, and then insert the pins into the connector



7. Push the coupling ring all the way forward so that it covers the edge of the cord connector.
8. Push the cable clamp housing forward until it locks into the connector body. The two clamps should snap into their compartments.
9. Push the boot all the way forward so that it covers the cable clamp housing securely.
10. Remove the protective cap from the 12V DC connector on the AP.
11. Connect the DC cord connector that you have assembled to the 12V DC connector on the AP.
12. Connect the DC cable to a DC power source (for example, a battery).

You have completed connecting the Access Point to the administrative computer and to a DC power source.

Step 3: Log Into the Access Point's Web Interface

1. On the administrative computer, open a Web browser window.
2. In the address or location bar, type the following address:
   `https://192.168.0.1`
3. Press `<Enter>` on the keyboard to connect to the Access Point's Web interface. A security alert message appears.
4. Click **Yes** or **OK** (depending on the browser) to continue. The Access Point's login page appears.

Figure 22. The ZoneFlex Access Point login page

5. In **User name**, type `super`.
6. In **Password**, type `sp-admin`.
7. Click **Log In**. The Web interface appears, displaying the Device page.
8. Continue to "Step 4: Configure the Wireless Settings" below.

Step 4: Configure the Wireless Settings

To complete this step, you will need to configure the settings on the **Common** tab and at least one **Wireless #** tab. These are the essential wireless settings that will enable wireless devices on the network to associate with the Access Point.

NOTE: ZoneFlex 7762 has one 2.4GHz radio and one 5GHz radio. The wireless settings for each radio need to be configured separately on the Web interface (except for the country code setting, see note in Table 4). To configure the 2.4GHz radio settings, click **Configuration** > **Radio 2.4G**. To configure the 5GHz radio settings, click **Configuration** > **Radio 5G**.

For your reference, the default wireless settings on the Access Point are listed in Table 3.

Table 3. Default wireless settings

Setting	Default Value
SSID (network name)	Wireless 1 to Wireless 8 (8 WLANs)
Encryption (security)	Disabled on all WLANs
Default management IP address	`192.168.0.1`

Configure Common Wireless Settings

1. On the left menu of the Web interface, click **Configuration** > **Radio {2.5/5} G**. The Common page appears.
2. Verify that the common wireless settings are configured as listed in Table 4.

Table 4. Common wireless configuration

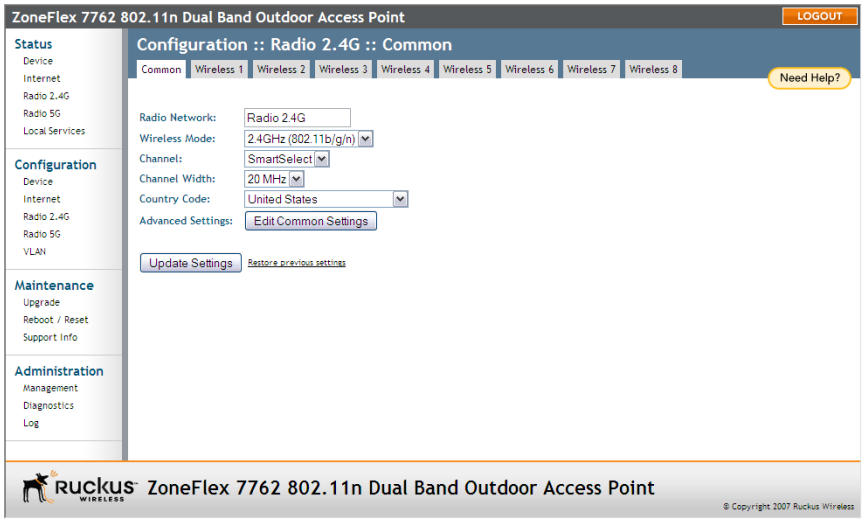
Setting	Recommended Value
Wireless Mode	Auto-select
Channel	SmartSelect
Channel Width	20MHz or 40MHz

Table 4. Common wireless configuration

Setting	Recommended Value
Country Code	• If you purchased the Access Point in the United States, this value is fixed to **United States** at the factory and is not user configurable. • If you purchased the Access Point outside the United States, verify that the value is set to your country or region. Selecting the correct country code ensures that the Access Point uses only the radio channels allowed in your country or region. *NOTE: The two radios on ZoneFlex 7762 AP are always configured with the same country code setting. If you change the country code for Radio 2.4G, for example, the same change will be automatically applied to Radio 5G.*

3. If you made any changes to the **Common** tab, click **Update Settings**.
4. Continue to "Configure Wireless # Settings" below.

Figure 23. The Configuration > Radio 2.4 > Common tab



Configure Wireless # Settings

1. Click one of the **Wireless #** tabs.
2. In **Wireless Availability**, click **Enabled**.
3. In **Broadcast SSID**, click **Enabled**.
4. Clear the **SSID** box, and then type a unique and descriptive name that you want to call this wireless network.

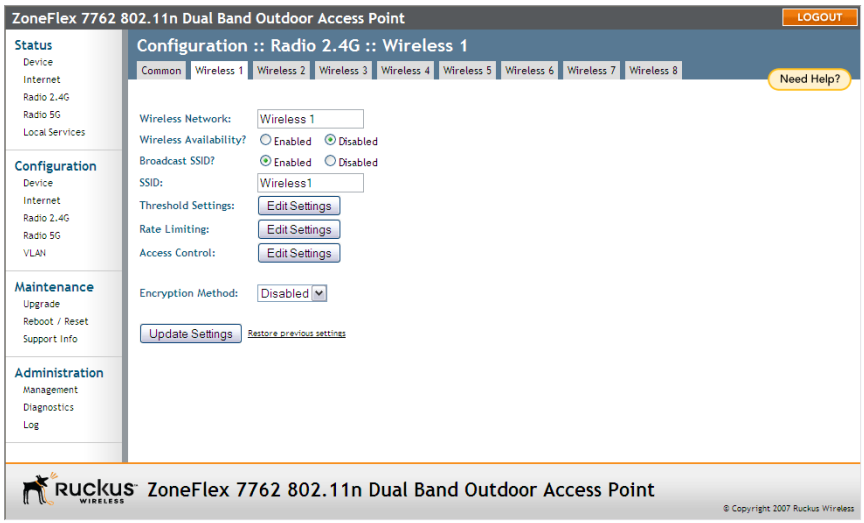
   For example, you can type `Ruckus Wireless AP`. This SSID is the name that will help users identify this wireless network in their wireless network connection application.

NOTE: You may also configure other wireless settings on this and other **Wireless #** tabs (in addition to the settings described above), although it is not necessary for completing the Access Point installation.

5. Click **Update Settings**.

You have completed configuring the basic wireless settings of the Access Point.

Figure 24. The Configuration > Radio 2.4 > Wireless 1 tab



(Optional) Set the FlexMaster Server Address

If you have a FlexMaster server installed on the network and you intend to use FlexMaster to manage the Access Point, you can set the FlexMaster server address at this point. Before starting this procedure, make sure you obtain the correct FlexMaster server URL.

NOTE: In addition to setting the FlexMaster server URL manually on the Access Point, you can also use DHCP Option 43 or DNS to point the Access Point to the FlexMaster server. For more information, refer to the *FlexMaster User Guide*.

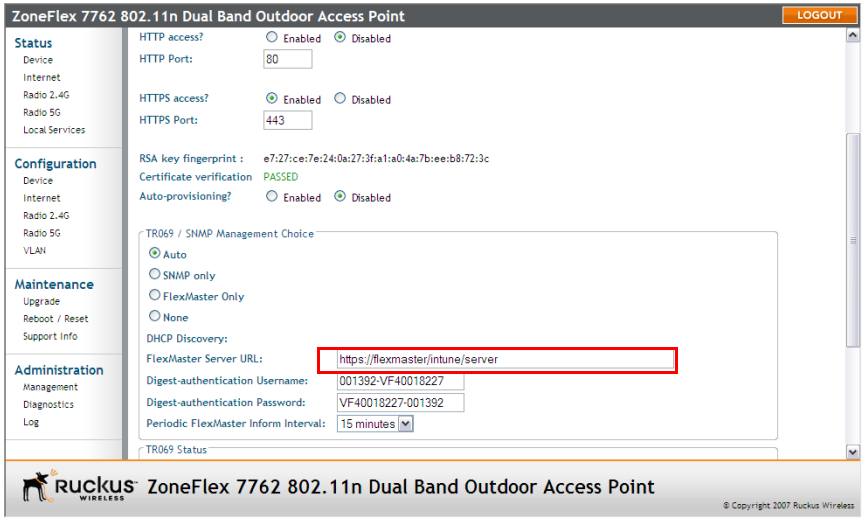
1. On the menu, click **Administration** > **Management**.
2. Scroll down the page to the **TR069 / SNMP Management Choice** section.
3. Verify that the **Auto** option is selected.
4. In **FlexMaster Server URL**, type the URL of the FlexMaster server on the network. You can use either `http` or `https` to connect to the URL and include either the host name or IP address of the FlexMaster server in the URL. The following are examples of valid FlexMaster server URLs:

   ```
   http://flexmaster/intune/server
   https://flexmaster/intune/server
   http://192.168.20.1/intune/server
   https://192.168.20.1/intune/server
   ```

5. Click **Update Settings** to save your changes.

You have completed setting the FlexMaster server address on the Access Point.

Figure 25. Type the FlexMaster server URL



NOTE: Instructions on how to verify that the Access Point and FlexMaster can communicate with each other are provided in "Check the TR069 Status (FlexMaster Management Only)" on page 34.

(Optional) Enable PoE for the PoE OUT Port

If you are using the supplied Ruckus Wireless PoE injector for 7762 AP (and power adapter) to supply power to the AP, you can use **PoE OUT** port to supply PoE to any PoE-capable device (for example, another ZoneFlex 7762 AP or an IP-based surveillance camera). The PoE feature for the PoE OUT port needs to be enabled from the Web interface.

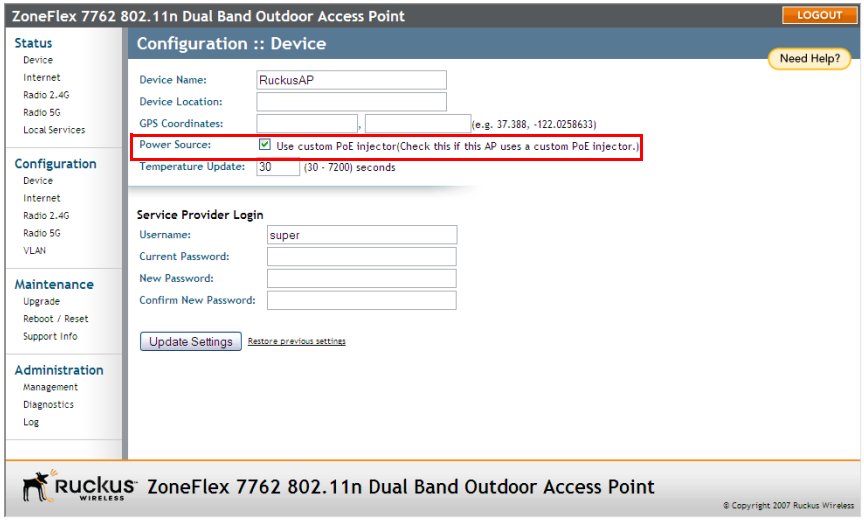
NOTE: If you use DC power or a PoE injector other than the one supplied with the AP, the AP will be operational but some features (such as the built-in heater and PoE for the PoE OUT port) will be unavailable. See Table 5 below for more information.

To enable PoE for the PoE OUT port

1. On the menu, click **Configuration** > **Device**.
2. In **Power Source**, select the **Use custom PoE injector** check box.
3. Click **Update Settings** to save your changes.

You have completed enabling PoE for the PoE OUT port.

Figure 26. Select the Use custom PoE injector check box



In addition to the supplied Ruckus Wireless PoE injector for ZoneFlex 7762 AP, you can also use DC power or a standard 802.3af/802.3at PoE injector to supply power to the AP. Note, however, that some features (specifically, the built-in heater and PoE for the PoE OUT port) will be unavailable if the supplied PoE injector is not used. Refer to Table 5 for the available power options and the limitations associated with each option.

Table 5. Power configuration options

Power Input	Operational AP	Heater	PoE for PoE OUT
Ruckus Wireless PoE injector for ZoneFlex 7762 AP (with supplied power adapter)	Yes	Yes	Yes
48V 802.3at	Yes	Yes	No
48V 802.3at	Yes	Yes	Class of power supplied with restrictions
48V 802.3af	Yes	No	No
12V DC	Yes	No	No

NOTE: If the built-in heater is disabled, the lowest operating temperature that the Access Point can support is -20° C.

Step 5: Disconnect the Access Point from the Administrative Computer

1. Disconnect the Access Point from the power source (either from the PoE injector or DC power source).
2. Verify that the **PWR** LED on the back of the Access Point is off.
3. Disconnect the Ethernet cable from the administrative computer's Ethernet port.

Step 6: Restore the Administrative Computer's Network Settings

1. On your Windows XP or Windows 2000 computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
   - On Windows XP, click **Start** > **Control Panel** > **Network Connections.**
   - On Windows 2000, click **Start** > **Settings** > **Network Connections**.
2. When the Network Connections window appears, right-click the icon for **Local Area Connection**, and then click **Properties**.
3. When the **Local Area Connection Properties** dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The **TCP/IP Properties** dialog box appears.
4. Restore the computer's network settings by typing the original IP address settings in the **TCP/IP Properties** dialog box.
5. On the **TCP/IP Properties** dialog box, click **OK** to close it.
6. Click **OK** again to close the **Local Area Connection Properties** dialog box.

You are now ready to connect the Access Point to your network.

5 Verifying Access Point Operation

Before mounting the unit, Ruckus Wireless strongly recommends that you verify that the Access Point is operating correctly. To do this, you will need to connect the Access Point to your live network temporarily and make sure that the network connection works and that wireless clients are able to associate with the Access Point and connect to your network and the Internet.

NOTE: The network and power connections that you will be making in this step are temporary. You can perform these verification tasks indoor.

Connect the Access Point to the Network

If the AP is using PoE

1. Connect the Ethernet cable from the **NETWORK** port on the PoE injector to your network's router or switch.
2. Connect the PoE injector to an AC power source.

If the AP is using DC power

1. Connect the Ethernet cable from the **PoE IN** port on the Access Point to your network's router or switch.
2. Connect the DC cable to a DC power source.

You have completed connecting the Access Point to your live network. Perform the tasks described in the following sections to verify that the Access Point is operating normally.

Check the LEDs

Perform a spot-check using the LEDs to verify that the Access Point is operating normally. If the Access Point is operating normally and no wireless clients are associated with it:

- The **Power LED** is green.
- The **Status LED** shows slow blinking amber. This indicates that there are no wireless clients connected to the Access Point's WLAN service.

Associate a Wireless Client with the Access Point

1. In the system tray, right-click the (Wireless Network Connection) icon, and then click **View Available Wireless Networks**.
2. In the list of available wireless network, click the network with the same SSID as you configured in "Configure Wireless # Settings" on page 29. For example, if you set the SSID to `Ruckus Wireless AP`, click the wireless network named **Ruckus Wireless AP**.
3. Click **Connect**.

Your wireless client connects to the wireless network. After the wireless client connects to the wireless network successfully, the wireless client icon in the system tray changes to .

Check the TR069 Status (FlexMaster Management Only)

If you configured the Access Point to report to a FlexMaster server on the network, make sure you verify that it can successfully communicate with the FlexMaster server. You can do this by checking the TR069 status on the Access Point's Web interface.

1. Log in to the Access Point's Web interface.
2. Go to the **Administration** > **Management** page.
3. Scroll down to the **TR069 Status** section.
4. Check the value for **Last successful contact**. If it shows a date in green, this indicates that the Access Point was able to communicate successfully with FlexMaster.

Disconnect the Access Point from the Network

1. Disconnect the Access Point from the power source.
2. Disconnect the Ethernet cable that runs to the Access Point's RJ45 port from your network's router or switch.

You are now ready to deploy the Access Point to its permanent mounting location.

6 Deploying the Access Point

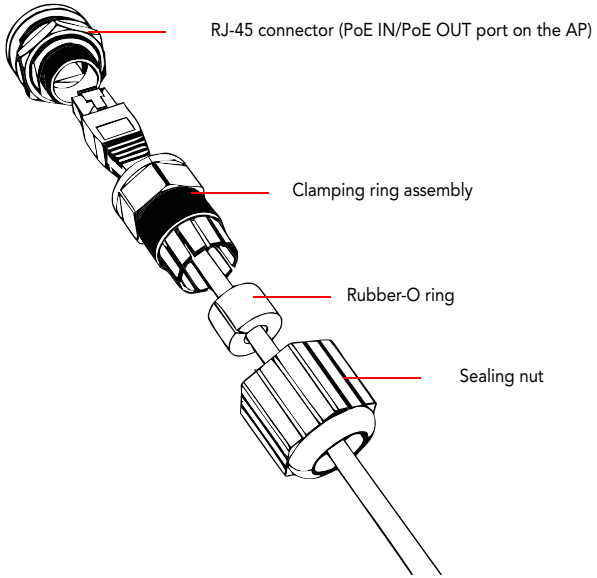
In this step, you will connect the Access Point to the network from its mounting location.

Step 1: Connect and Seal the RJ-45 Cable

The Access Point comes with two sets of RJ-45 waterproof connectors. To complete this step, you will need one RJ-45 cable (two if you plan to use both the PoE IN and PoE OUT ports) and the RJ-45 waterproof connector assembly that is supplied with the AP.

1. Take out one of the two plastic bags containing the RJ-45 waterproof connector assembly.
2. Feed the end of the RJ-45 cable through the sealing nut, rubber-O ring, and clamping ring assembly (in the same order). See Figure 27.

Figure 27. RJ-45 waterproof connector assembly



3. Connect the RJ-45 cable to the **PoE IN** port on the AP.
4. Screw the clamping ring assembly onto the RJ-45 connector.
5. Push the rubber-O ring into the clamping ring assembly. Make sure that the clamping ring assembly fully encloses the rubber-O ring.
6. Push the sealing nut forward and tighten it to seal the assembly.

If you are using both the **PoE IN** and **PoE OUT** ports, assemble the second waterproof connector by repeating the same procedure.

You have completed connecting the RJ-45 cable and sealing the connection.

Step 2: Complete the Power Connections

The Access Point supports both PoE and DC power and it can be connected to both power sources at the same time. If you want use both power sources, complete the power connections in this step.

NOTE: If you want to use PoE only or DC power only (not both), you do not need to complete this step. You already configured one power connection earlier when you completed "Step 2: Connect the Access Point to the Administrative Computer" on page 22. You may continue directly to "Step 3: Connect the Access Point to the Network" on page 41.

For instructions on completing the power connection that you need to make, refer to the procedures below:

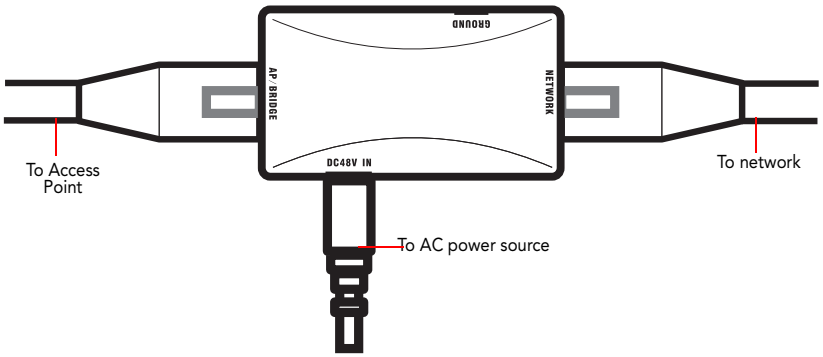
- Use Power Over Ethernet
- Use DC Power

Use Power Over Ethernet

1. Take out the PoE injector and the power adapter from the Access Point package.
2. Obtain one outdoor-rated Ethernet cable and one indoor-rated cable.
3. Connect one end of the *outdoor-rated* Ethernet cable to the **PoE IN** port on the Access Point, and then connect the other end to the **AP/BRIDGE** port on the PoE injector.
4. Connect one end of the other Ethernet cable to the **NETWORK** port on the PoE injector, and then connect the other end to your network.
5. Connect the power jack to the **DC48V IN** connector on the PoE injector.

WARNING: Do not apply power to the Access Point at this point. You should connect the Access Point to a power source only after you finish connecting all other components in "Step 3: Connect the Access Point to the Network" on page 41.

Figure 28. Connect the Ethernet cables and power adapter to the PoE injector



You have completed setting up the PoE power connection.

Use DC Power

NOTE: If you already assembled the DC cord connector in "Step 1: Connect the Cables to the Access Point" on page 15, you only need to connect the DC cord connector to the 12V DC port on the AP (see Step 10 and onwards).

To use DC to power the Access Point, you need to assemble the DC cord connector, and then plug it into the 12V DC connector on the AP. To complete this task, you will need:

- A 0.195" to 0.265" diameter DC cable. Make sure that it is long enough to connect the AP (at its mounting location) with the DC power source.
- A pair of long nose pliers
- A soldering gun (optional)

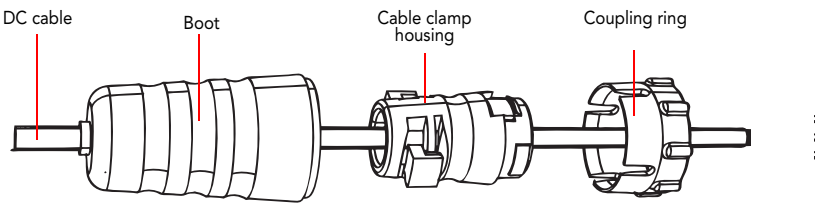
To assemble the DC cord connector and supply DC power to the AP

1. Connect one end of an Ethernet cable to the **PoE IN** port on the AP, and then connect the other end to the administrative computer's Ethernet port.

NOTE: A waterproof connector for the RJ-45 port is supplied with the AP. You do not need to assemble the connector at this point.

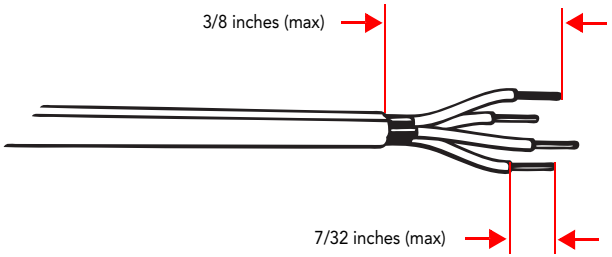
2. Take the small plastic bag containing the DC connector pins and DC cord connector from the AP package. Take its contents out.
3. Feed the end of the DC cable through the boot, cable clamp housing, and coupling ring (in the same order). See Figure 29.

Figure 29. DC cable connector assembly



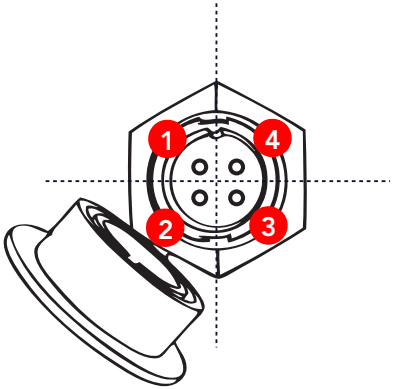
4. Strip the DC cable for about 3/8" and each of the four conductors for about 7/32".

Figure 30. Strip the DC cable and the four conductors



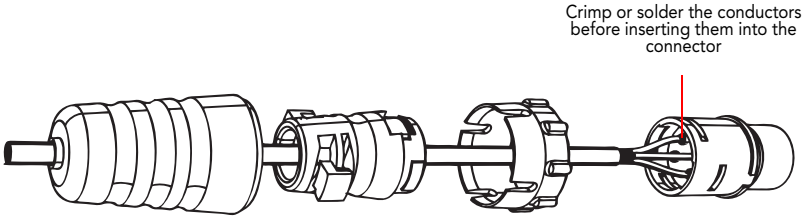
5. Insert the stripped part of the conductors into the four connector pins, and then crimp the edges of the connector pins to secure the conductors. Alternatively, use a soldering gun to solder the conductors to the pins.
6. Insert all four connector pins into the holes on the cord connector. See Figure 31 for the correct pinout connections.

Figure 31. Pinout connections for the DC cable



No.	Pinout
1	+DC power
2	-DC power
3	Factory reset
4	Ground

Figure 32. Insert the conductors into the pins, crimp or solder the edges, and then insert the pins into the connector



7. Push the coupling ring all the way forward so that it covers the edge of the cord connector.
8. Push the cable clamp housing forward until it locks into the connector body. The two clamps should snap into their compartments.
9. Push the boot all the way forward so that it covers the cable clamp housing securely.
10. Remove the protective cap from the 12V DC connector on the AP.
11. Connect the DC cord connector that you have assembled to the 12V DC connector on the AP.
12. Connect the DC cable to a DC power source (for example, a battery).

You have completed connecting the Access Point to the administrative computer and to a DC power source.

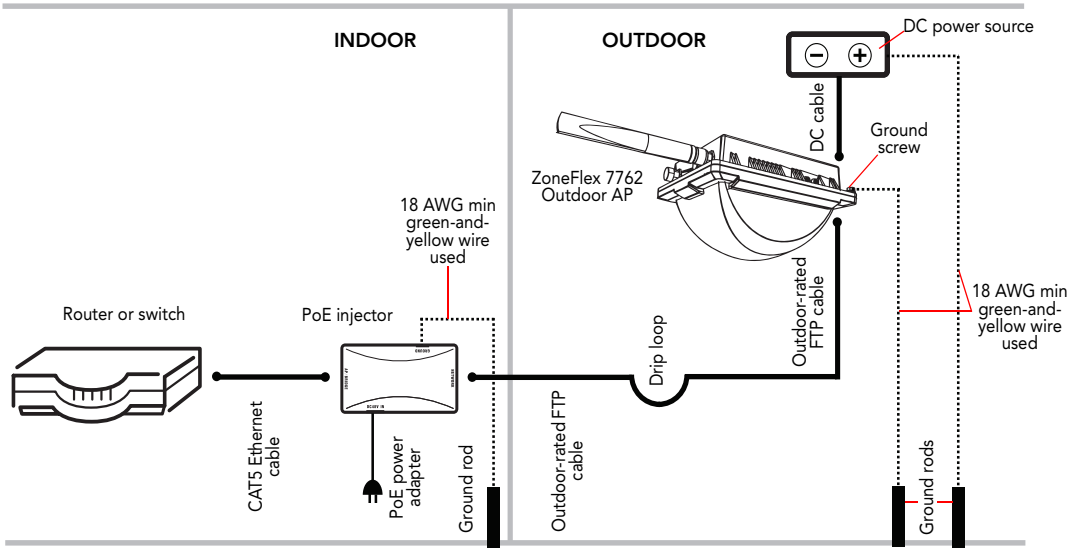
WARNING: Do not apply power to the Access Point at this point. You should connect the Access Point to a power source only after you finish connecting all other components in "Step 3: Connect the Access Point to the Network" on page 41.

You have completed setting up the DC power connection.

Step 3: Connect the Access Point to the Network

In this step, you will connect the Access Point from its mounting location to the network. The connections required for your installation depend on the power sources that you are using. Figure 33 shows an example of the connections required for a typical installation that uses both PoE and DC power as power sources.

Figure 33. Typical installation components using both PoE and DC power sources



WARNING: Do not apply power to the Access Point until you finish connecting all other components.

1. Take the Access Point to its mounting location.
2. Verify that the Cat5e FTP cable (outdoor-rated) from the Access Point is long enough to reach the PoE injector that is installed indoor.
3. Create a drip loop in any cable that is attached to the Access Point. This will prevent water from running along the cable and entering the Access Point or the building where the cable terminates.
4. Verify that the **PoE IN** port on the AP is connected to the **AP/BRIDGE** port on the PoE injector.
5. Connect the Ethernet cable from the **NETWORK** port on PoE injector to your network router or switch.
6. Apply power to the Access Point.

- If you are using PoE, plug the power adapter to an AC power source.
- If you are using DC power, connect the DC cable to a DC power source.

7. Check the **Power LED** on the Access Point. It should turn *red* as the AP powers on and *green* when it completes its power-on sequence.
8. Continue to "Attaching the Mounting Brackets".

7 Attaching the Mounting Brackets

What You Will Need

To complete this procedure, you will need the following items:

- Static bracket (supplied with the AP)
- Dynamic bracket (supplied with the AP)
- 10mm ratchet wrench

If you are mounting the Access Point on a flat surface, you will also need:

- An electric drill with an 8mm drill bit
- Wall anchors (supplied with the AP)
- Flat washers (supplied with the AP)
- Hex nuts (supplied with the AP)

If you are mounting the Access Point on a pipe or pole, you will also need the following:

- A 30mm to 60 mm (1.18 in. to 2.36 in.) pipe or pole
- Two steel clamps (supplied with the AP)
- 10mm flathead screwdriver

Step 1: Attach the Static Bracket to the Mounting Surface

The procedure for attaching the bracket to the mounting surface depends on whether you are mounting the Access Point to a flat surface or a pole.

- Attaching the Bracket to a Flat Surface
- Attaching the Bracket to a Pole

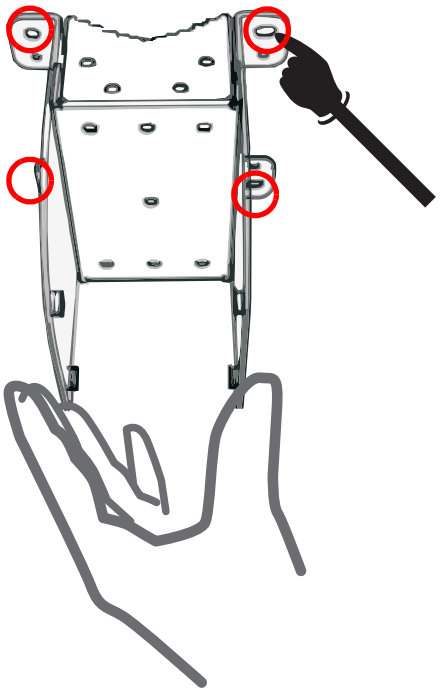
Attaching the Bracket to a Flat Surface

WARNING: Ruckus Wireless strongly recommends that you wear eye protection before drilling holes on the mounting surface.

NOTE: The wall anchors that are supplied with the Access Point are for mounting on *solid masonry walls* only. If you are mounting the Access Point on other materials (for example, drywall, wood, or hollow cinder block), you will need the appropriate types of wall anchors. Check your local hardware store for options.

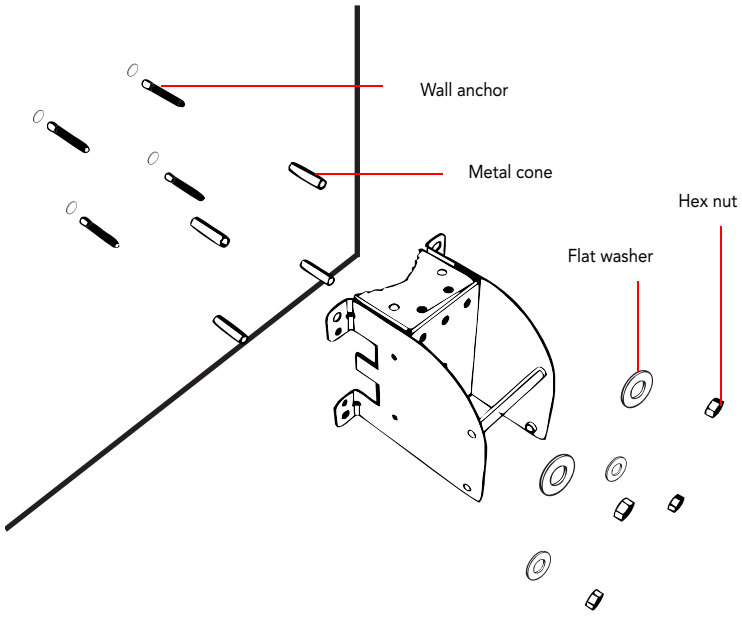
1. Place the static bracket at the exact location on the mounting surface where you want to mount it.
2. Use the static bracket as a template to mark the locations of the mounting holes on the four mounting tabs.

Figure 34. Mark the locations of the mounting holes



3. Remove the static bracket from the mounting surface.
4. Drill an 8mm-diameter hole with a depth of 36mm-38mm into each of the four markings that you made on the mounting surface.
5. Insert a wall anchor (with the unthreaded part first) into each of the holes that you drilled.
6. Place a metal cone on each wall anchor.
7. Align the four screw holes on the bracket with the wall anchors that you inserted earlier.
8. Use four flat washers and four hex nuts to attach the bracket to the mounting surface.

Figure 35. Insert a wall anchor into each hole that you drilled, align the holes on the bracket with the wall anchors, and the secure the bracket with the flat washers and the hex nuts



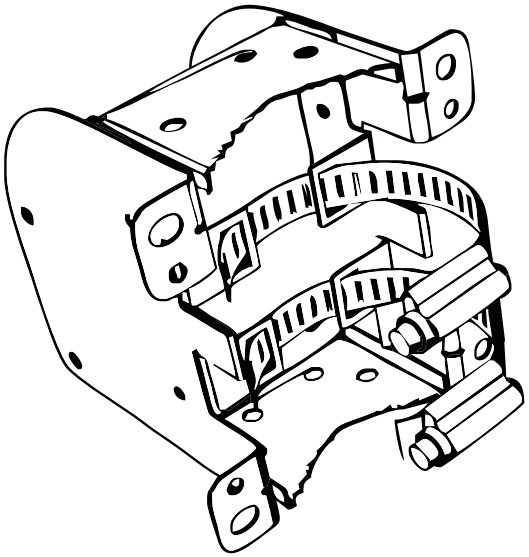
9. Using a 10mm open-end wrench, tighten the nuts to secure the bracket to the mounting surface. Screw torque value must be 0.4-0.5 Newton meter (Nm). As you tighten the nuts, the metal cones that are built into the wall anchors will expand and lock the wall anchors into place.
10. Continue to "Step 2: Attach the Dynamic Bracket to the Access Point".

Attaching the Bracket to a Pole

The Access Point can be mounted vertically or horizontally on a 30mm to 60mm (1.18 in. to 2.36 in.) pole.

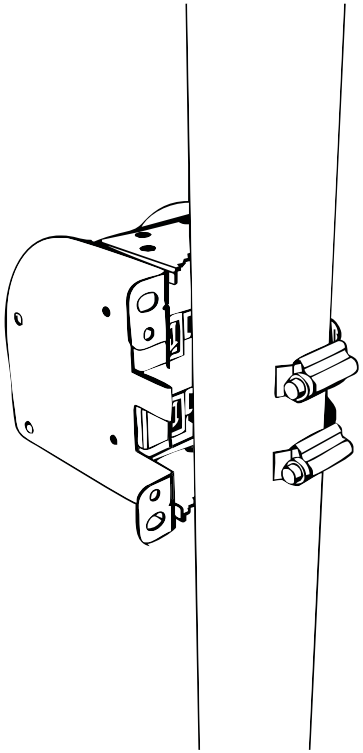
1. Insert the open end of one steel clamp into the upper two tabs on the bracket.
2. Take the other steel clamp and insert it into the lower two tabs on the bracket.

Figure 36. Insert the steel clamps into the two tabs on the bracket



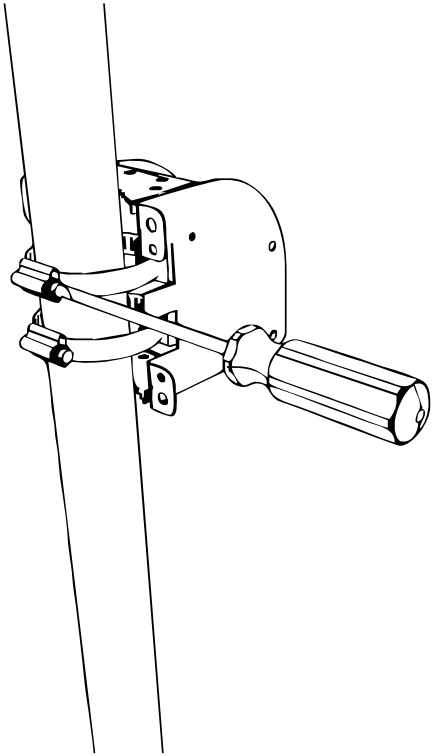
3. Use the clamps to attach the bracket to the pole.

Figure 37. Use the clamps to attach the bracket to the pole



4. Using a 10mm flathead screwdriver, tighten the clamp locks to secure the bracket to the pole. Screw torque value must be 1.1-1.2 Newton meter (Nm).

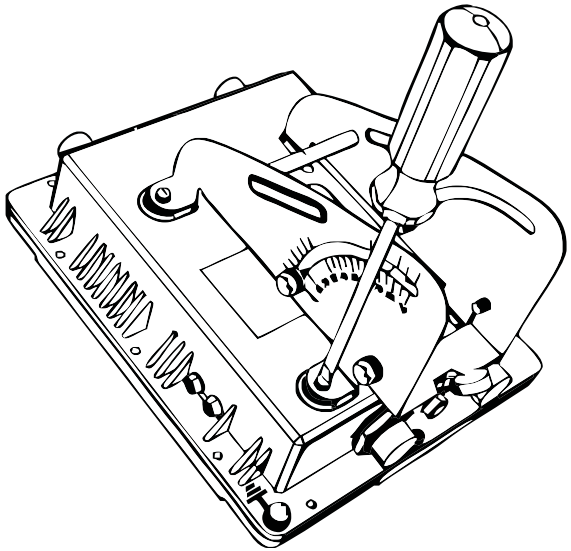
Figure 38. Tighten the clamp locks to secure the bracket



5. Continue to "Step 2: Attach the Dynamic Bracket to the Access Point".

Step 2: Attach the Dynamic Bracket to the Access Point

1. Place the dynamic bracket onto the flat side of the Access Point so that the four screw holes on the bracket align with the four screw holes on the Access Point. Make sure that the shorter end of the mounting bracket is on the same side as the antenna connector.
2. Insert four machine screws (supplied with the Access Point) into the screw holes on the bracket.
3. Using a 6mm Phillips screwdriver, tighten the four machine screws to fasten the bracket to the Access Point. Screw torque value must be 0.4-0.5 Newton meter (Nm).



4. Continue to "Mounting the Access Point" in the next section.

8 Mounting the Access Point

To mount the Access Point, you will need to join the two mounting brackets that you attached earlier to the device and the mounting surface. For this procedure, you will need the following items:

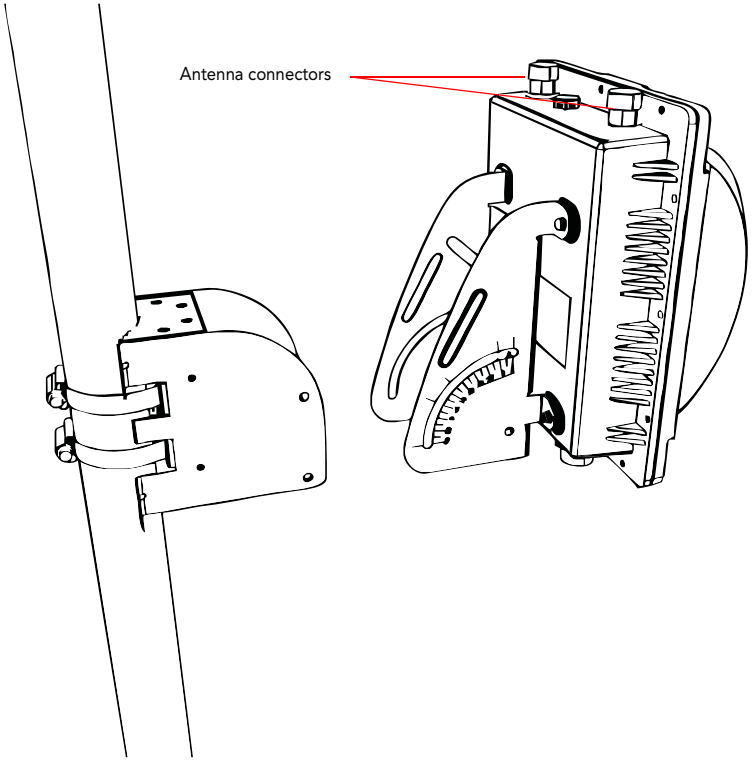
- Hex bolts
- 10mm ratchet wrench

NOTE: Figures in this section show mounting on a vertical pole. Procedures for mounting on a flat surface or horizontal surface are similar.

To join the two mounting brackets together:

1. Join the two brackets as shown in Figure 39. Make sure that:
   - The dynamic bracket (attached to the Access Point) encloses the static bracket (attached to the mounting surface).
   - *(For mounting on a vertical pole)* The side of the Access Point with the 5GHz antenna connectors is on top, especially if you are planning to install an external antenna.
   - *(For mounting on a horizontal pole)* The side of the Access Point with the **RJ45** port is toward the building. This will help ensure that the Ethernet cable or DC cable will not create any signal interference for the antenna.

Figure 39. Joining the two brackets in a vertical pole installation

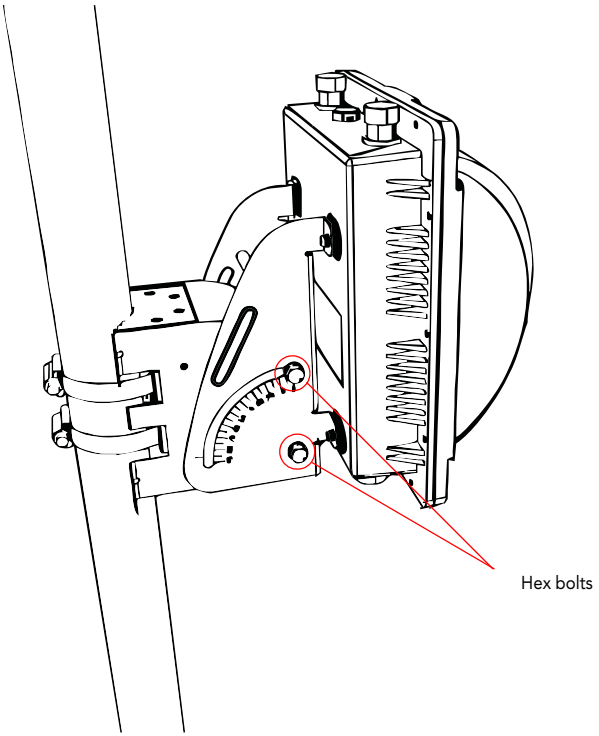


2. Align the mounting holes on the dynamic bracket with the mounting holes on the static bracket.
3. Place a split lock washer, and then a flat washer onto a hex bolt. Then insert the hex bolt into one of the mounting holes.

NOTE: Make sure the screw-washer assembly is in correct order. The split-lock washer should be in the middle and the flat washer should touch the bracket.

4. Repeat Step 3 for each of the mounting holes. There are four mounting holes on the bracket – two on each side.

Figure 40. Insert hex bolts into the mounting holes



5. Finger tighten the hex bolts.
6. Adjust the Access Point to your desired orientation.

NOTE: If you have not yet determined the optimal orientation for your Access Point, refer to "Determine the Optimal Mounting Location and Orientation" on page 10 for orientation guidelines.

7. Using a 10mm ratchet wrench, tighten the hex bolts to fix the Access Point's orientation. Screw torque value must be 0.6-0.8 Newton meter (Nm).

You have completed mounting the Access Point.

9 (Optional) Mounting and Connecting the 5GHz External Antennas

If you want to extend the range of your wireless network, you can connect 5GHz 14dBi (or lower) external antennas to the standard N-type female connectors on the Access Point.

WARNING: Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

WARNING: Before connecting the 5GHz antennas to the Access Point, make sure that you disconnect the Access Point from the power source.

1. Disconnect the Access Point from the power source.
2. Unscrew the metal caps that protect the antenna connectors. Place the metal caps in a safe place, in case you need them later.
3. Connect the 5GHz antennas to the standard N-type female antenna connectors on the Access Point.

   If the 5GHz antennas come with RF coaxial cables (for example, a patch antenna), do the following:

   a. Physically mount the patch antenna at your desired location, preferably on the same supporting mounting structure as the Access Point.
   b. Connect the RF coaxial cables to the two standard N-type female connectors on the Access Point.
4. Apply weatherproofing tape to the antenna connectors to help prevent water and dirt from entering the Access Point.
5. Reconnect the Access Point to the power source.

CAUTION: If you are not connecting 5GHz external antennas to the standard N-type antenna interfaces on the Access Point, make sure that the metal caps remain installed and securely fastened to protect the interface from elements, such as water and dirt.

You have completed connecting external antennas to the Access Point.

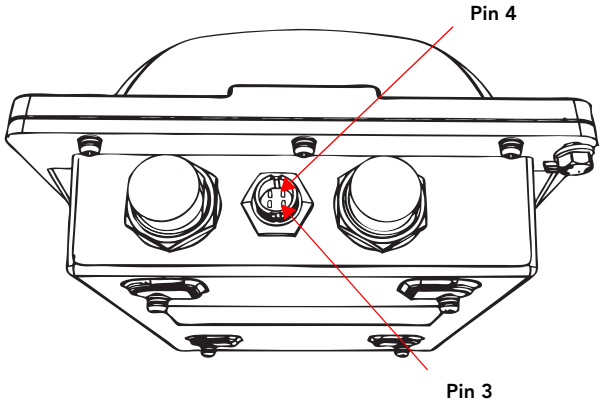
10 Resetting the Access Point to Factory Default Settings

You can reset the Access Point to its factory default settings by shorting pins 3 and 4 on the DC connector. Use the electrical shunt that is provided with the Access Point package to perform this procedure.

NOTE: The Access Point can only be reset to factory default if it is using PoE.

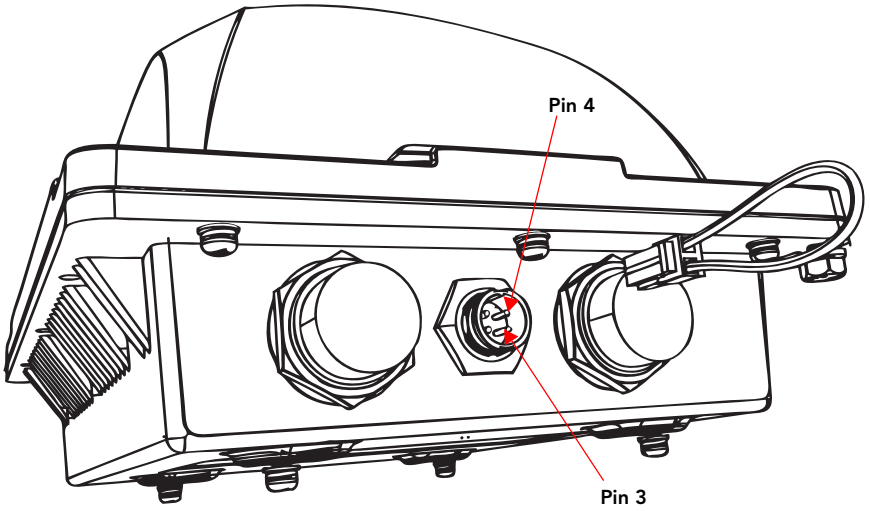
1. Verify that the Access Point is using PoE as its power source.
2. Take out the electrical shunt that is supplied with the Access Point.
3. If the DC connector on the Access Point is protected by its cap, remove the cap. Take note of the location of pins 3 and 4 (see Figure 41).

Figure 41. Note the location of pins 3 and 4



4. Install the shunt on pins 3 and 4, as shown in Figure 42

Figure 42. Install the shunt



5. Wait 10 seconds, and then remove the shunt.

Figure 43. Wait 10 seconds

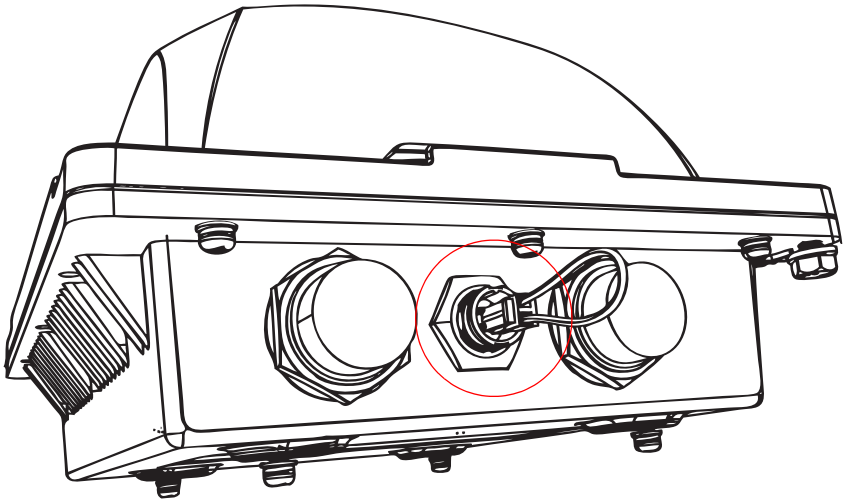
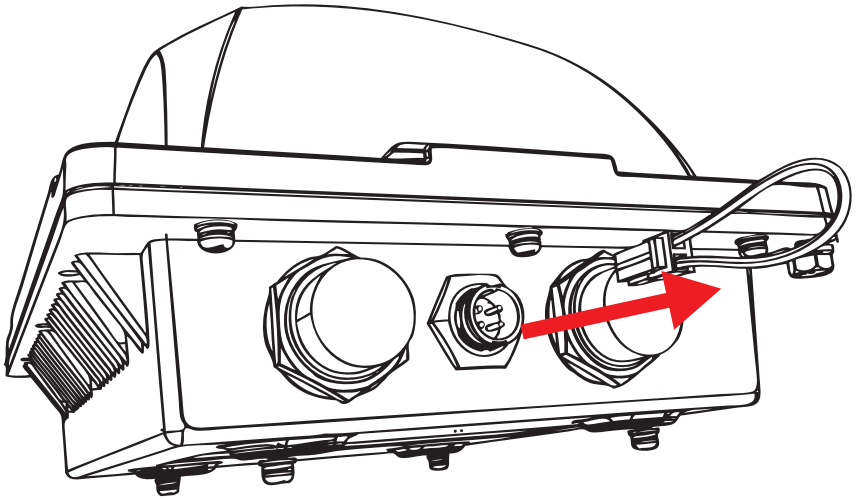


Figure 44. Remove the shunt



6. Verify that the STATUS LED on the Access Point is *off*. If the STATUS LED is off, it indicates that the reset process is complete.

You have completed resetting the Access Point to its factory default settings.

11 What to Do Next

The following are some of the post-installation tasks that Ruckus Wireless recommends. Refer to the *ZoneFlex 7762 Dual Band 802.11n Outdoor Access Point User Guide* for more information on configuring and managing the Access Point.

Change the Administrative Password

Management access to the Web interface of the Access Point is controlled through administrative user name and password. As soon as you complete the Access Point setup, make sure you log on to the Access Point's Web interface and change the default administrative user name and password. This will help prevent unauthorized users from logging in to the Access Point's Web interface and changing the access point settings to compromise your network.

Configure the Security Settings

Unlike wired networks, anyone with a compatible wireless adapter can receive wireless data transmissions from your network well beyond your walls. To prevent unauthorized users from entering your wireless network and accessing your computers and files, Ruckus Wireless strongly recommends enabling and configuring wireless security on the Access Point. The Access Point supports several types of encryption and authentication methods to help prevent unauthorized access to your wireless network.

Read Related Documentation

If you are using FlexMaster or ZoneDirector to manage the Access Point, make sure you read the accompanying documentation to learn how to configure and manage the Access Point from the FlexMaster and ZoneDirector Web interface.

The latest versions of Ruckus Wireless product documentation are available for download on the Ruckus Wireless Support Web site at:

http://support.ruckuswireless.com/documents